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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/600,637	06/20/2003	David A. Hayner	1280.SC12755TS	7168

34814 7590 05/03/2007  
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AUSTIN, TX 78730

EXAMINER
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CHU, KIM KWOK

ART UNIT	PAPER NUMBER
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2627

MAIL DATE	DELIVERY MODE
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05/03/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/600,637	<b>Applicant(s)</b> HAYNER ET AL.	
	<b>Examiner</b> Kim-Kwok CHU	<b>Art Unit</b> 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on Appeal Brief filed on 3/13/2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 21-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 6/20/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Reopening of Prosecution After Appeal Brief or Reply Brief***

In view of the Appeal Brief filed on March 13, 2007,  
PROSECUTION IS HEREBY REOPENED. A new ground of rejection  
is set forth below.

To avoid abandonment of the application, appellant must  
exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office  
action is non-final) or a reply under 37 CFR 1.113 (if this  
Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal  
under 37 CFR 41.31 followed by an appeal brief under 37 CFR  
41.37. The previously paid notice of appeal fee and appeal  
brief fee can be applied to the new appeal. If, however,  
the appeal fees set forth in 37 CFR 41.20 have been  
increased since they were previously paid, then appellant  
must pay the difference between the increased fees and the  
amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of  
reopening prosecution by signing below:

  
ANDREA WELLINGTON  
SUPERVISORY PATENT EXAMINER

***Response to Remarks***

1. Applicant states that the prior art of Ikeda fails to disclose or suggest "an output to provide a signal with decoupling compensation for a first actuator based on the representation of the second actuator position as recited by claim 21" (page 1 of the Remarks, last five lines).

Accordingly, a newly found prior art of Watanabe et al. (U.S. Patent 6,298,019) is cited to reject Applicant's Claims 21-37.

The prior art of Watanabe teaches a servo feedback loop for controlling focusing and tracking operations. Each servo operation is compensated by its gain change means (121, 122, 127) and all the gain change means are connected as a loop to the servo processor 129. In other words, the output of one actuator control signal is based/affected by the other actuator control signal because their gain compensation is a series loop.

**Claim Rejections - 35 USC § 102**

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

*A person shall be entitled to a patent unless--  
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.*

3. Claims 21-37 re rejected under 35 U.S.C. § 102(b) as being anticipated by Watanabe et al. (U.S. Patent 6,298,019).

4. Watanabe teaches a disk servo control method having all of the steps as recited in claims 21 and 22. For example, Watanabe teaches the following:

(a) a first actuator control law portion 120 comprising an input 116,117 to receive a representation of a first actuator position (Tracking error), and an output TC (Fig. 1; column 17, lines 61-64; the tracking servo circuit has an input and an output) a second actuator control law portion 1133 comprising an input to receive a representation of a second actuator position (focusing error), and an output FC; (Fig. 1; column 18, first two lines; the focusing servo circuit has an input and an output); a first actuator decoupler portion 129 comprising a first input TE coupled to the output of the first

actuator control law portion 120 and a second input FE coupled to the output of the second actuator control law portion 133 (Fig. 1; both TC and FC are connected to DSP 129), and an output (connected to the gain changers) to provide a signal with decoupling compensation (gain) for a first actuator (tracking actuator 130) based on the representation of the second actuator position (TC is compensated by a gain change means 122 which based on the gain chain 121 of the second actuator control law portion 133).

(b) With respect to Claim 22, the first actuator decoupler 129 comprises a linear modification module (amplifier in the DSP) having an input FE coupled to the output of the second actuator control law portion 133, and an output to provide a linearly scaled representation of a value received at its input (Fig. 1; DSP provides linearly scaled output such as digitization and amplification); wherein the linearly scaled representation is used to provide the signal with decoupling compensation for the first actuator decoupler 129 (Fig. 1; gain compensation means 121, 122 and 127 are a series of feedback means).

5. Watanabe teaches an optical disk drive having all of the elements and means as recited in claims 23-25. For example, Watanabe teaches the following:

(a) a focus control loop (Fig. 1; focusing is a servo operation); a tracking control loop (Fig. 1; focusing is a servo operation), wherein the focus control loop and the tracking control loop are cross-coupled (Fig. 1; gain change means 121, 122 and 127 provide the cross link), wherein a focus control command (operation) excites (starts/causes) the tracking control loop (read track address and then track jump) and a tracking control command excites (starts/causes) the focus control loop (track jump and then focus on the seek target); and a decoupler 129 configured to produce a modified focus control command (gain change) from the focus control command and the tracking control command (gain change means 121, 122 and 127 are in form of a cascade stage), and configured to produce a modified tracking control command (gain change) based on the tracking control command and the focus control command (Fig. 1), wherein the modified focus control command has a different excitation (different gain change) of the tracking control loop than the focus control command and wherein the modified tracking control command has a different excitation (different gain change) of the

focus control loop than the tracking control command (Fig. 1).

(b) With respect to Claim 24, a lens assembly 105, wherein the focus loop comprises a focus actuator 103, 104 configured to move the lens assembly in a focus direction (Fig. 1).

(c) With respect to Claim 25, a lens assembly 105, wherein the tracking loop comprises a tracking actuator 103, 104 configured to move the lens assembly in a tracking direction (Fig. 1).

6. Claims 26-30 have limitations similar to those treated in the above rejection, and are met by the reference as discussed above. Claim 26 however also recites the following limitations which are also disclosed by the prior art of Watanabe:

(a) with respect to Claim 26, determining cross-coupling characteristics (servo gains) of a focus actuator and a tracking actuator of an optical pickup unit (Fig. 1; gain means 121, 122 and 127 for focusing and tracking operations are a servo loop which can be considered as a cross-coupling characteristics); determining a decoupling matrix to decouple the focus actuator and the tracking actuator (Fig. 1; DSP 129 and gain change means forms a



servo loop which can be considered as a de-coupling matrix of tracking and focusing).

7. Claims 32-35 have limitations similar to those treated in the above rejection, and are met by the reference as discussed above. Claims 32-35 however also recite the following limitations which are also disclosed by the prior art of Watanabe:

(a) with respect to Claim 32, the decoupler 129 modifies a focus command to have a reduced effect on a tracking position of the lens assembly and modifies a tracking command to have a reduced effect on a focus position of the lens assembly (Fig. 1; gain change means 121, 122 and 127 are cascaded in a series mode which modifies a tracking mode and a focusing mode).

(b) with respect to Claim 33, the decoupler is a software routine stored on computer readable media (Fig. 1; servo operation is written in software in form of a routine and stored in the DSP 129 as illustrated in Fig. 17).

(c) with respect to Claim 34, the decoupler 129 is an analog circuit (Fig. 1; servo processing 129 includes analog circuit).

(d) with respect to Claim 35, the decoupler 129 is an electro-mechanical circuit (Fig. 1; DSP includes actuators 130 and 131 which are electro-mechanical circuit).

8. Claims 36 and 37 have limitations similar to those treated in the above rejection, and are met by the reference as discussed above. Claim 36 however also recites the following limitations which are also disclosed by the prior art of Watanabe:

(a) with respect to Claim 36, determining cross-coupling characteristics of a focus actuator and a tracking actuator of an optical pickup unit (Fig. 1; servo loop characteristics is the cross-coupling characteristics); determining a decoupling matrix to decouple the focus actuator and the tracking actuator (Fig. 1; DSP 129 and its servo processor include de-coupling matrix of tracking and focusing).

#### ***Related Prior Art***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tagawa (6,462,323) is pertinent because Tagawa teaches an optical disc having a compensating means for a focusing actuator.

Hajjar et al. (5,627,808) is pertinent because Hajjar teaches an optical disc having a compensating means for both focusing and tracking actuators.


10. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Kim CHU whose telephone number is (571) 272-7585 between 9:30 am to 6:00 pm, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrea Wellington, can be reached on (571) 272-4483.

The fax number for the organization where this application or proceeding is assigned is (571) 273-8300

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished application is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9191 (toll free).

Kim-Kwok CHU  
*cc* 4/27/2006  
Examiner AU2627  
April 27, 2006  
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